

# Problems With Your Shoulder?

## The Rotator Cuff

by Nina Hsieh

### What is the rotator cuff?

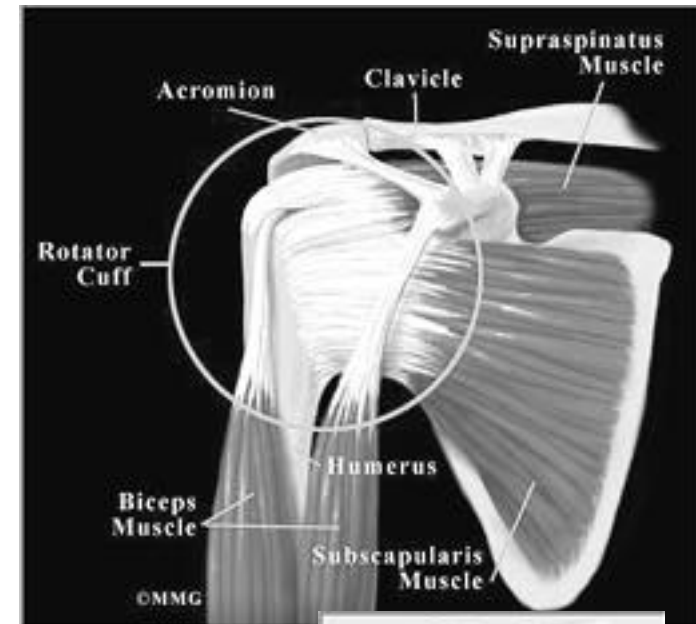
The rotator cuff is comprised of four muscles surrounding the shoulder joint. Each muscle originates from the scapula, commonly known as the shoulder blade, and inserts into the head of the humerus through tendon attachments. The four muscles are the Supraspinatus, Infraspinatus, Teres Minor, and Subscapularis, also abbreviated as SITS.

### What exactly do they do?

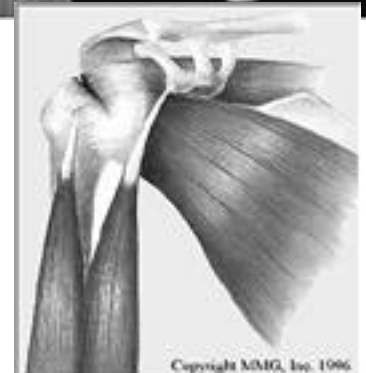
Each muscle has its own specific function, but as a complete unit, the rotator cuff is essential for stabilizing the ball of the shoulder in its socket. As individual muscles, the Supraspinatus will abduct the arm, moving the arm away from the side of the body to about a 60° angle. The Infraspinatus and the Teres Minor will externally rotate the shoulder. And the Subscapularis will internally rotate the shoulder.

### Injuries to the shoulder?

Injuries to the shoulder can happen at all ages. For most of the younger population, a rotator cuff injury usually occurs with an unusual demanding use to the shoulder, such as pitching, throwing, and wrestling. As a person ages, injuries to the rotator cuff are usually caused by the loss of elasticity to the muscle and tendon tissues. Losing elasticity can lead to a susceptibility to tearing, while performing everyday activities. There are many injuries that could occur in the shoulder. Because the shoulder has so many structures and a very limited amount of space, one little injury can start a chain reaction with many other injuries. The com-



mon injuries occurring with the rotator cuff are impingement, tendinitis, and tears or strains. Impingement arises when the space within the shoulder is confined.



This injury can be caused by many different things.

- 1) If the acromion process hooks downward towards the humeral head, the space will be narrowed.
- 2) Movement of the humeral head is generated mostly by the deltoid and pectoralis major muscles.

If a person has a weakened rotator cuff, the upward pull of the deltoid muscle can cause the supraspinatus to be impinged within the shoulder's joint space.

Finally, if there are any bone spurs, bursa thickening, or inflammation within the shoulder, impingement can

also occur. Tendinitis is an inflammation to the tendon. When this takes place, it is normally the supraspinatus tendon or the biceps brachii tendon that gets inflamed. Tears in the rotator cuff can take place when there is repetitive injuries, overuse, or muscle imbalance.

## **What kind of Signs & Symptoms?**

Pain found in a rotator cuff injury is usually a dull, achy pain. The pain is located on top, in front, or to the outer part of the shoulder. If the arm is raised above shoulder height, pain is more severe and can turn into a sharp, shooting pain. If there is a tear in the rotator cuff, weakness will occur when the arm is raised above shoulder height. The shoulder will also be painful when lifted forward or outward. If there is tendinitis, crepitus or a crunching and popping noise will appear. A final symptom is pain at night when sleeping on the involved side.

## **Treatments**

- **Impingement:** If it is minor, rest, anti-inflammatories like Aleve and Advil, icing for 15 minutes 3-4 times daily with an hour in between, and rehab exercises. With major tears to the rotator cuff or significant impingement, surgical intervention is sometimes needed for complete resolution of symptoms.
- **Tendinitis:** Rest, anti-inflammatory medication, ice, and rehab exercises.
- **Tears:** Minor tears can heal with rest, ice, anti-inflammatory medication, and rehab exercises. Severe or 3rd degree tears/strains will require surgical repair.

## **Exercises**

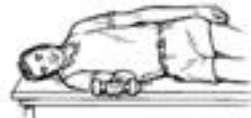


**External rotation @ 90°:**



**External rotation**

**@ neutral:**



**Internal rotation**

**@ neutral:**



**Empty can:**

*Note: when performing the empty can, make sure the arm is brought forward to 30°.*

If you have any problems, please feel free to contact us or visit us on the Web @ <http://rehabworks.ksc.nasa.gov>.

## **References:**

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